The University of British Columbia
Department of Earth, Ocean and Atmospheric Sciences

Hazard Identification and Risk Assessment for Field Activities

1. Critical components

(a) A comprehensive appraisal of the hazards to be encountered on field activities and an assessment of the risks associated with these hazards must be undertaken during the planning for the trip.

(b) Staff members in charge of field activities and supervisors of postgraduate students are responsible for ensuring that the risk assessment procedure has been completed and signed off before the commencement of the field activity.

(c) Following identification of the hazards likely to be found during the field activity, risk control measures must be adopted to minimise the risk associated with each hazard.

(d) Potential hazards and the control measures in place must be disclosed to all participants before departure.

(e) This document is only valid for the dates specified and the following conditions apply:
i) Activity and participants must remain the same. *Any variation to the activity or participants will require the Field trip supervisor to re-assess the risk and submit a new version*
ii) The dates specified must be for a period of less than 12 months. *For ongoing (eg. long term project that spans several years) the Field trip supervisor is required to submit a new version each year).*

1.1. Hazard identification and risk assessment

To achieve a comprehensive appraisal of hazards during fieldwork it is advisable to incorporate the ideas of all participants and where appropriate stakeholders. A hazard considered as trivial to one participant may be considered significant to another. This diversity in hazard identification may result from variation in, personal experience, individual capabilities or bias associated with personal attitudes to OH&S.

Hazards may be site or task specific, they may be insidious or apparent and they have the capacity to affect individuals differently. The accepted method of 'Risk Assessment' is to score a hazard on the basis of 'Consequence' and 'Likelihood' (table 1). These individual scores are then used with the 'Risk Matrix' (table 2) to determine the level of risk; giving a score of high, medium or low.

Where the risk associated with a task/hazard is determined to be high or medium the task should not be undertaken unless the hazard can be reduced. In this circumstance a systematic approach known as the 'Hierarchy of Control' needs to be applied to the control of a hazard (table 3). The hierarchy is subdivided into 6 levels of control; the first level of

control being 'Elimination'. Elimination aims to remove a hazard or hazardous work practice from a worksite. An example may be to remove a trip hazard. However, it is not always practicable or possible to eliminate a hazard and therefore the next control, 'Substitution' can be applied. An example of substitution may be changing from using a toxic chemical to a non toxic alternative.

Skipping forward to the final level of control; Personal Protective Equipment (PPE) is considered the lowest, least effective, control because it assumes that the employee involve in a task will be exposed to some level of risk. Where long term exposure is likely PPE may not be sufficient in mitigating risks to employees.

Table 1, Defining categories of Consequence and Likelihood

Consequence	Description
Major	Death or extensive Injury
Moderate	Medical treatment
Minor	First aid treatment
Insignificant	No treatment

Likelihood	Description
A	Is expected to occur
B	Could probably occur
C	Could occur but only rarely
D	May occur but probably never will

Table 2, Risk Matrix combining elements of Consequence and Likelihood

Likelihood \ Consequence	Major	Moderate	Minor	Insignificant
A	H	H	H	M
B	H	H	M	M
C	H	M	M	L
D	M	M	L	L

Table 3, Hierarchy of control

	Example
1. Elimination	**Remove the hazard** **• Asbestos remove it from the building**
2. Substitution	**Use an alternative** **• use scaffolding rather that ladders** **• quieter machinery for noisy models**
3. Isolation	**Separation of hazard** **• place a physical barrier around the hazard to exclude access** **• separate vehicle and foot traffic in warehouses**
4. Redesign	**Change the process or equipment so that the hazard is avoided**
5. Administration	**Change the work practice** **• require employees involved in hazard processes to have certain rest periods, e.g. truck drivers**
6. Personal Protective Equipment	**Provide protective clothing and or equipment.**

2. Accident/Incident reporting, investigation and recording

(a) Before commencement of the field activity, the staff member in charge must be familiar with the UBC policy on Accident/Incident Reporting, Investigation and Recording Procedures

(b) An Accident/Incident Report must be completed for all incidents, no matter how minor. *The supervisor of the group or the staff member in charge of the field activity should undertake an investigation of the incident on site and assist with the completion of the CAIRS incident report form. A thorough investigation of the immediate and underlying causes of an incident is essential to prevent a recurrence.* Refer to the UBC Incident Site Investigate Guide for details. The CAIRS report is on-line and should be completed as soon as on-line access is possible.

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HAZARD CHECKLIST	Possible source/agent	Initial risk level before control measures	RISK CONTROL measure	Final risk level
		Low, Med, High or N/A	MUST BE FILLED IN IF THERE IS ANY RISK	
Temperature	☐Fire ☐Hot environment ☐Cold environment ☐Other_____			
Water or Immersion in	☐Boating ☐Swimming ☐Diving ☐Collecting or travelling near water bodies ☐Other_____			
Stress	☐Thermal – heat ☐Thermal - cold ☐Repetitive activity/motion ☐Other_____			
Cutting, stabbing, puncturing	☐Blades/knives ☐Sharpened tools ☐Equipment ☐Environment (eg. thorny bushes)_____ ☐Other (specify)			

Allergies and allergic reactions (specify)	☐Chemical_____ ☐Animal_____ ☐Food_____ ☐Other_____			
Hygiene	☐Food preparation ☐Food storage ☐Personal (eg , cleaning and toilet facilities) _____ ☐Other_____			
Entanglement	☐Rope/wires ☐Grass ☐Clothing ☐Other_____			
Slipping, tripping and falling	☐Rope/wires ☐Uneven surface ☐Wet environment/surface ☐Muddy environment/surface ☐Working at heights/ladder use ☐Tree climbing ☐Other_____			
Site specific Animal hazards unrelated to trapping	☐ Bites ☐ Stings ☐ ☐ ☐ Other (specify species if known and identified hazard)			

Animals trapping or study where direct contact is expected	Common Name- Scientific Name Permit No. Hazards identified			
Electrical	☐Power generation equipment ☐Plant and Equipment ☐High Voltage ☐Other_____			
Chemicals (specify)	☐Handling and use ☐Transport ☐Storage ☐Name of chemical(s)_____ _____ _____			

Pressurised vessels or equipment (includes compressed air and gas bottles)	☐Handling and use ☐Transport ☐Storage ☐Name of gas(es)_____ _____			
Vehicles, plant and machinery	☐Four wheel drive ☐Quad bike ☐Boat ☐Trailer ☐Bus ☐Heavy vehicle_____ ☐Scientific equipment ☐Motorised equipment ☐Pressure equipment ☐Conveyors ☐Sampling equipment ☐Other_____			
Radiation	☐Ionising source ☐Non-ionising source ☐Plant and Equipment (laser) ☐Electromagnetic ☐Ultraviolet (lamps/solar) ☐Other_____			
Vibration	☐Plant and Equipment ☐Environment (eg earthquake) ☐Other_____			

Crushing	☐Equipment ☐Plant ☐Environment (eg rock fall)_____ ☐Other_____			
Noise	☐Plant and Equipment ☐Vehicle_____ ☐Environment_____ ☐Other_____			
Inhalation	☐Fumes ☐Smoke ☐Dust ☐Welding vapours ☐Chemicals (specify)_____ _____			
Suffocation	☐Tunnels ☐Avalanches ☐Land slippage ☐Confined space ☐Other_____			
Struck by or striking against	☐Plant and Equipment ☐Vehicle ☐Lightning ☐Environment (eg rock fall, tree branch)_____ ☐Other_____			

Other factors				

Completed by: (Name)	**Date:**
Completed by: (Signature)	**Date:**
Signed: (Supervisor)	**Date:**
Signed: (Dept Head or delegate)	**Date:**

NOTE: This form is approved only when all signatures have been obtained.

Thanks to Charles Darwin University, School of Environmental and Life Sciences-Australia